<div style="background:#f5a623">
A Contribution is Required
</div>

Only applicants who have made a contribution will be eligible to be accepted as an Outreachy intern. Please look over the projects list and work with a mentor to start a contribution to a project. If you're having trouble figuring out how to contribute, check out our contribution tips.

In order to be eligible to be selected as an intern, you'll need to record your contributions to each project. You can record your contributions by going to the projects list, finding your project, and clicking the link to 'record your contributions and create a final application'.

Why apply to Outreachy? > Outreachy Eligibility Rules > Find a Mentor and Internship Project > Mboalab

Outreachy Internships with Mboalab

Mboalab is a Free and Open Source Software (FOSS) community in the December 2021 to March 2022 Outreachy internships round.

Internships with other FOSS communities can be found on the the current round page.

What is Mboalab?

MboaLab is an open and collaborative space located in Yaoundé, Cameroon. The aim of MboaLab is to catalyse sustainable local development and improve people's living conditions through open science.

MboaLab is an open and collaborative space located in the village of Mefou-Assi, Yaoundé, Cameroon. The word "Mboa" has different meanings in native Cameroonian languages: in Matakam, it means "new"; in Ewondo, it means "unique"; in Duala, it means "village". Literally translated, MboaLab is a unifying village dedicated to creation; even better, it is a laboratory for social innovation, community education, collaboration and mediation at the service of the community.

Aim and missions

The aim of MboaLab is to catalyse sustainable local development and improve people's living conditions through open science. To this end, the main missions of Mboalab are as follows:

- provide community and lifelong education for the population, as well as formal education for the younger generations;
- serve as a platform for exchanges on issues related to local context;
- mediate between local communities and academia;
- propose solutions that meet the needs of communities, using local knowledge and open digital technologies;
- raise public awareness of environmental issues;
- facilitate access to basic health care.

Our vision of sustainable local development

We advocate for the character of a local development, which is conferred by the imperative to have it emerge from the communities themselves; this is what ensures its relevance and sustainability. In other words, sustainable local development needs to be thought by and for the members of a given community. To do so, it is important to break the unenthusiastic spirit that exists among many Cameroonians, by training healthy, educated citizens capable of critical thinking on issues related to their immediate environment. By choosing education and health as priority axes, associated with its role as a mediator between Science-Technologies-Societies; we can say clearly that Mboalab could be a powerful catalyst for local sustainable development.

Mboalab Biotech and its role in the achievement of our mission.

Mboalab Biotech is a node of the Open Bioeconomy Lab hosted in MboaLab space. Established in 2018, the lab currently runs a number of projects amongst which the open enzyme manufacturing project. At its core, our work in Mboalab Biotech is focused on making biotechnology research and tools more accessible to labs around the world through scientific research and development and local production of reagents. We are committed to the development of open educational resources as well as simple and cost-effective

protocols that can be applied in resource-limited laboratories. We also provide scientific research projects targeting local health issues, internships opportunities, and training sessions to young local scientists in order to equip them with molecular biology and DIY- Biology skills, and prepare them for employment.

Open Projects

Mentors for these projects are willing to work with new Outreachy applicants. Please note that as the round goes on, mentors may close their project to new applicants because they are already working with many applicants. Make sure to start your required contribution as soon as possible!

Each project mentor is looking for applicants who have different skills. Sometimes a skill is a hard requirement for an applicant to have. Other times, a mentor might prefer an applicant to have a skill, but they would accept an applicant as an intern who didn't have that skill. Some skills are "nice to have" meaning it would be great if applicants have this skill, but the mentor doesn't have a strong preference.

Each project will require a different level of experience with a particular skill. Experience levels are indicated with numbers:

1   No knowledge required

2   Concepts

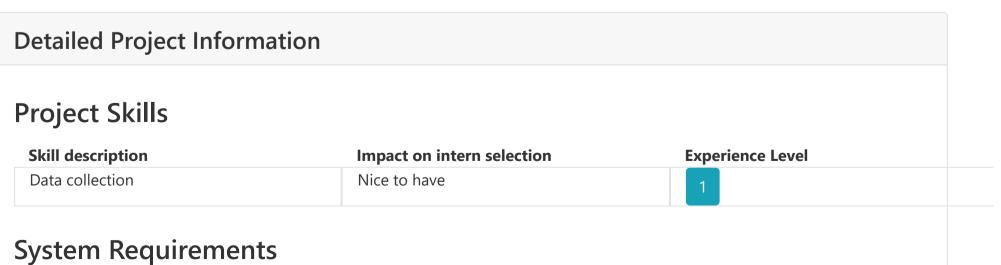3   Experimented

4   Comfortable

5   Challenge

Mboalab project #1

Improve diagnostics of typhoid through Open Science: An Artificial Intelligence-based technique

Deadline is Nov. 5, 2021 at 4pm UTC to record your contributions and create a final application.

Skill description	Impact on intern selection	Experience Level
Data collection	Nice to have	1

Open Projects

Improve diagnostics of typhoid through Open Science: An Artificial Intelligence-based technique

Deadline is Nov. 5, 2021 at 4pm UTC to record your contributions and create a final application.

Record Contibutions and Apply to This Project

Detailed Project Information

Project Skills

Skill description	Impact on intern selection	Experience Level
Data collection	Nice to have	1

System Requirements

No system requirements provided.

Project Description

Improve diagnostics of typhoid through Open Science: An Artificial Intelligence-based technique

Context

Typhoid or Enteric fever is one of the infectious human diseases in Cameroon and Africa. Outbreaks of typhoid fever caused by Salmonella typhi remains a serious health problem worldwide. There are a number of tests available presently, from molecular to immunological and biochemical to microbiological. Some well-known and conventional Method of Diagnosis of Typhoid Fever are :

- **Microbiological cultures**: The isolation of the causative organism, Salmonella enterica serovar Typhi (Salmonella Typhi), is the gold standard for the diagnosis (WHO, 2018). Body fluids like blood, bone marrow, stool, urine, rose spots, gastric and intestinal secretions may be cultured. Blood culture gives a definitive diagnosis. But, the use of bacteriological cultures for the diagnosis of typhoid infection is cost-intensive and technically difficult, hence the need for other diagnostic tests.
- **Antibody detection tests:**   These are rapid serologic tests designed for early and easy point-of-care use. The Widal Test is based on the measurement of antibodies (agglutinins) against somatic (O) and flagellar (H) antigens of Salmonella typhi in the sera of patients. Widely used in many developing countries because of its low cost, Widal test is limited by lack of standardized methods of assay and misinterpretation of results. This has led to the overestimation of the number of patients presenting with acute febrile illnesses diagnosed with Typhoid fever. A systematic review by Mengist and Tilahun (2017) revealed poor reliability, low sensitivity and specificity of the Widal test.

So, misdiagnosis is usually experienced since most health care facilities use only Widal test without confirmation of results with a second test method. In addition, the diagnosis of Typhoid involves several levels of uncertainties. Patients cannot tell exactly how they feel, doctors and nurses cannot tell exactly what they observe.

Opportunities and solution

Augmented intelligence makes more sense than artificial intelligence, especially in tropical diseases such as Typhoid. This is because it highlights the enhanced capabilities of a human when augmented with the right tools and technologies.In a sensitive industry such as healthcare, human intelligence cannot be replaced. Augmented intelligence specifies systems that augment human intelligence rather than attempt to replace them. Combining AI systems with an irreplaceable human clinician can advance better diagnosis.

We propose to use the microcultures test with the blood which seems to be the best accepted by the laboratory technicians. We will use CNNs as algorithms on the collected images to train the algorithm. Everything will depend on the volume of images we have, if we have few we will use transfer learning to automate the test of microbiological cultures .As we saw above this test is reliable at 61% and to reinforce the reliability of this test we will use the second algorithm which is a fast decision tree learner. This algorithm based on 18 symptoma variables will allow us not only to confirm the diagnosis but above all to determine the level of severity of the disease. **The main challenge our project is facing is availability of local and high quality open data.**

Internship Tasks

1) Design interviews for practitioners in order to collect the associations of symptoms that confirm the disease and its level of severity.

2) Images collection taking into account the different ethnic groups, gender and age in order to have a heterogeneous dataset to allow us to avoid the biases that may arise and undermine the use of our solution.

3) Design the Convolutional Neural Networks to train images and Decision tree to train structured data.

Intern Benefits

Capacity buidling of interns is one of our main objective with this motto : "From zero to Hero". So don't be affraid by the concepts used in the description, or by your backroung. Our community will guide you towards values and best practices of open science.

Project Contribution Information

As part of the application process, all applicants must make at least one contribution to be accepted as an intern for this project. Only applicants who make a contribution will be eligible to be accepted as interns.

Some projects accept contributions through a project repository. This project has not provided a link to a project repository.

We are seeking for interns who can work in an inclusive and multidisciplinary environment, to contribute in setting up a local and robust dataset subdivised in two datasets: the first consisting of images and the second of structured data. The dataset should be Open, interoperable and aligned with the Metadata Schema 4.4 https://schema.datacite.org/

How do I work with the Mboalab community?

Outreachy applicants can get help and feedback from both mentors and community members. Community members discuss their contributions in a public chat. Outreachy applicants can often learn from those discussions.

Please introduce yourself on the public project chat:

- **WhatsApp** - [Follow this link](#) to join this project's public chat.
  Use this link to join the Mboalab WhatsApp group : https://chat.whatsapp.com/FL1te2yu2bg4wlYzuk43Ek

Outreachy mentors will often be in the community public chat. The project mentor's usernames are: Elja, Stephane Fadanka, thomasmboa,

Who will I work with?

Each Outreachy intern works remotely with one or more mentors. Most Outreachy mentors only work with one intern per round. Mentors are your guides in learning more about free and open source software, technical and non-technical skills, and will always be there when you get stuck.

During this internship project, you'll be interacting with a team of 3-5 people. The project has been accepting contributions from people from around the world for more than 2 years.

You'll be working with the following mentors:

jafsia elisee

Personal info:

- Pronouns: [he/him/his](#)
- Timezone: Africa/Douala
- Location: Cameroun

Contact info:

- Personal email: "jafsia elisee" <jafsiaelisee@gmail.com>
- Please try to contact the mentor on public community channels as much as possible. Often other mentors for the project can answer your question or point you in the right direction to get help. They may be able to answer your question faster than emailing your mentor directly. While it's fine to contact mentors privately with doubts, Outreachy applicants and interns will need to learn how to ask questions and work publicly through the community communication channels.
- Username on community forums or chat: Elja
- GitHub profile: https://www.github.com/jafsia
- GitLab profile: https://gitlab.com/jafsia
- Blog: https://www.linkedin.com/jafsiaelisee
- Twitter profile: https://twitter.com/euclude

Each Outreachy mentor will have a different mentorship style, a preferred way to contact them, and different ways of working with interns. jafsia elisee's mentorship style is: I prefer informel progress reports ans video chats.

Outreachy mentors are required to be experienced contributors to free and open source software (FOSS). jafsia elisee has contributed to this team for 1-2 years. This mentor has made the following contributions to this team or other FOSS communities: 3D modeling ans printing. Design of AI algorithmes.

You'll be able to find this mentor on the FOSS community communication channel under the username: Elja

Stephane Fadanka

Personal info:

- Pronouns: [he/him/his](#)
- Timezone: Africa/Douala
- Location: Yaoundé, Cameroon

Contact info:

- Personal email: "Stephane Fadanka" <stephanefadanka@gmail.com>
- Please try to contact the mentor on public community channels as much as possible. Often other mentors for the project can answer your question or point you in the right direction to get help. They may be able to answer your question faster than emailing your mentor directly. While it's fine to contact mentors privately with doubts, Outreachy applicants and interns will need to learn how to ask questions and work publicly through the community communication channels.
- Username on community forums or chat: Stephane Fadanka
- GitHub profile: https://github.com/Fadanka
- GitLab profile: https://gitlab.com/stephanefadanka
- Twitter profile: https://twitter.com/StephaneFadanka

Each Outreachy mentor will have a different mentorship style, a preferred way to contact them, and different ways of working with interns. Stephane Fadanka's mentorship style is: I'm quite flexible and happy to adjust accordingly with the intern needs. I'm confortable with pair programming, Weekly reports and happy to interact through email and video chats.

Outreachy mentors are required to be experienced contributors to free and open source software (FOSS). Stephane Fadanka has contributed to this team for more than 2 years. This mentor has made the following contributions to this team or other FOSS communities: As executive director of the Mboalab community I'm involved In most of the decision making processes, including welcoming and training news members, strategic orientations and collaboration with local and international partners. As science lead and manager of the biotechnology department, I'm also involved in workshop Training and mentorship activities in the field of molecular and synthetic biology both for local and remote students.

You'll be able to find this mentor on the FOSS community communication channel under the username: Stephane Fadanka

Mboalab

Personal info:

- Pronouns: they/them/theirs
- Timezone: Africa/Douala
- Location: Yaounde - Cameroon

Contact info:

- Personal email: "Mboalab" <thomasmboa@gmail.com>
- GitHub profile: https://github.com/Mboalab
- Twitter profile: https://twitter.com/LabMboa

Each Outreachy mentor will have a different mentorship style, a preferred way to contact them, and different ways of working with interns. Mboalab's mentorship style is: short daily standups, via email and Google Doc

Outreachy mentors are required to be experienced contributors to free and open source software (FOSS). Mboalab has contributed to this team for more than 2 years. This mentor has made the following contributions to this team or other FOSS communities: https://github.com/Mboalab/

You'll be able to find this mentor on the FOSS community communication channel under the username: thomasmboa

How do I get help?

The community members and the project mentor(s) are your guides to introduce you to the project community and contribution norms. Mentors are here to help answer your questions, encourage you, and help you when you get stuck.

You should try to ask your questions on public project channels before asking mentors or coordinators questions privately. Often you'll get an answer faster if you ask on the public communication channels, rather than waiting for a mentor to answer your email. Applicants often have the same questions, so asking them in a public place helps other people.

Try to make your questions concrete "I'm having trouble installing X and I've tried Y but I get Z error message". If you are having trouble figuring out how to make a contribution, please state where you looked for contribution tasks. For example, "I'm trying to make a contribution to X project. I looked in the Y repository for issues marked newcomer-friendly, but they all seem to be claimed by other Outreachy applicants. Can you point me to an issue that involves Z?"

When you've exhausted all other avenues of communication, you can reach out to the community's coordinator. Each FOSS community has one or more coordinators. The Mboalab coordinator(s) are "Mboalab" <thomasmboa@gmail.com>, "Yo Yehudi" <Y.Yehudi@wellcome.org>

If you're having trouble reaching both the mentors and the coordinators, you can contact the Outreachy mentors mailing list.

The Outreachy website is built with Django, Wagtail, bootstrap and deployed with Dokku. The code is licensed GPL v3 and can be found in the Outreachy website GitHub repo. There is a separate GitHub repo for creative works

This program and all offers related to it are void where prohibited or restricted by law or where operation of the program would violate any law or right. All participants in the program must agree to the terms and conditions of the program which will be provided to the selected applicants.

Outreachy privacy policy.